97

DOUGLAS & LOMASON COMPANY

Corporate Offices: 24600 Hallwood Court, Farmington Hills, MI 48335-1671

Fax (313) 478-5189
Telephone (313) 478-7800

Please Reply to:
P.O. Box 20783, Atlanta Airport
Atlanta, Georgia 30320
Telephone (404) 349-7000

April 28, 1993

Mr. Ken Herstowski
United States Environmental Protection Agency
Region 7, Iowa Section
726 Minnesota Avenue
Kansas City, Kansas 66101

RE: Drum Storage Area
Closure Certification Report
Douglas & Lomason Company
Red Oak, Iowa
EPA ID No. IAD041107871

Dear Mr. Herstowski:

Please find enclosed three (3) copies of the Drum Storage Area Closure Certification Report for the above referenced facility. Contained as Appendix A is the Engineer's Recommendation stating that he recommends that the closure of the former drum storage area be approved.

We are most anxious to receive an "official" response that in fact the drum storage area is closed and that financial assurance is no longer required.

If additional information is needed, please contact me at (404) 349- 7000.

Sincerely,

DOUGLAS & LOMASON COMPANY

Raymond L. Osborne
Corporate Environmental Manager

CC: Mr. Steve Warywoda, D&L, Plant Manager
Mr. Bob Stachura, D&L, VP & Executive Manager
Mr. Warren Daubenspeck, D&L, VP, Safety, Environmental, & Loss Control

Drum Storage Area Closure Certification Report

DOUGLAS & LOMASON COMPANY

Red Oak, Iowa

April, 1993

HDR Engineering, Inc.

Drum Storage Area

Closure Certification Report

Douglas & Lomason Company

Red Oak, Iowa

April, 1993

HDR ENGINEERING, INC.

Omaha, Nebraska

Project No. 07080-007-107

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SECTION 1.0

INTRODUCTION

1.1 Purpose and Scope

The purpose of this document is to present certification of closure for the former drum storage area at the Douglas & Lomason Company ("Douglas & Lomason") facility, EPA I.D. No. IAD041107871, located in Red Oak, Iowa. The closure activities and documentation have been performed in accordance with the guidance set forth by the Resource Conservation and Recovery Act ("RCRA"), 40 CFR Part 265, Subpart G.

This closure certification report includes the following:

- description of closure activities undertaken
- results and summation of the results of these activities
- certification of final closure of the drum storage area.

The results of activities performed during the closure of the former drum storage area indicate that the analyte of concern, total chromium, is not present at or above the regulatory levels approved by the United States Environmental Protection Agency ("EPA") in the area of the facility previously designated for drum storage.

The closure activities and results are summarized in this report.

SECTION 2.0

BACKGROUND

2.1 Site Description

The Douglas & Lomason's Red Oak facility is located at 2700 North Broadway, Red Oak, IA, approximately one-quarter mile north of the intersection of U.S. Highways 34 and 48. The site is bounded on the north by a Burlington Northern rail spur and open field, on the east by open field, on the south by a parking area and another manufacturing facility not associated with Douglas & Lomason, and on the west by Highway 48, as illustrated in Figure 2-1, Location Plan.

The facility has undergone two expansions since the operation of the former drum storage area. The drum storage area was located at the south end of the facility when its operation ceased in 1982. The facility was expanded in 1983 and 1988, as shown by Figure 2-2, Facility Modification Plan.

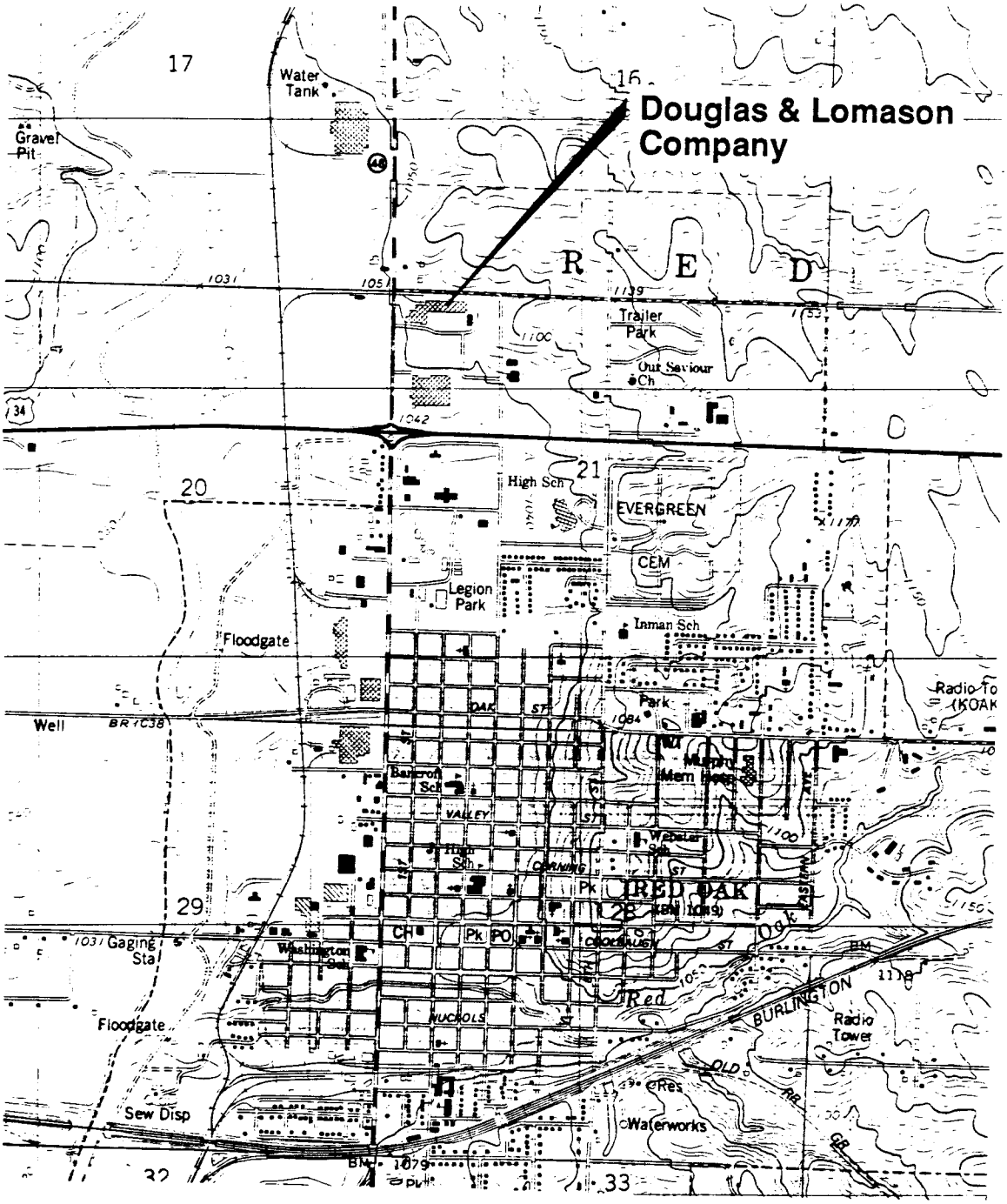
An existing floor plan is shown by Figure 2-3, Facility Plan, and indicates the location of the former drum storage area within the facility. Figure 2-4, Drum Storage Plan, illustrates the approximate boundaries of the drum storage area within the facility.

2.2 Facility History

In 1981, Douglas and Lomason applied for and received a Treatment/Storage/Disposal Facility (TSD) interim status permit as regulated under RCRA for the drum storage area. The purpose of the drum storage area was to provide secure storage of filter cake materials (dewatered sludges), containing chrome and zinc, generated by the on-site industrial wastewater pretreatment plant. Included in Appendix

N

Scale 1" = 2000'



Source: United States Geological Survey

HDR

HDR Engineering, Inc.

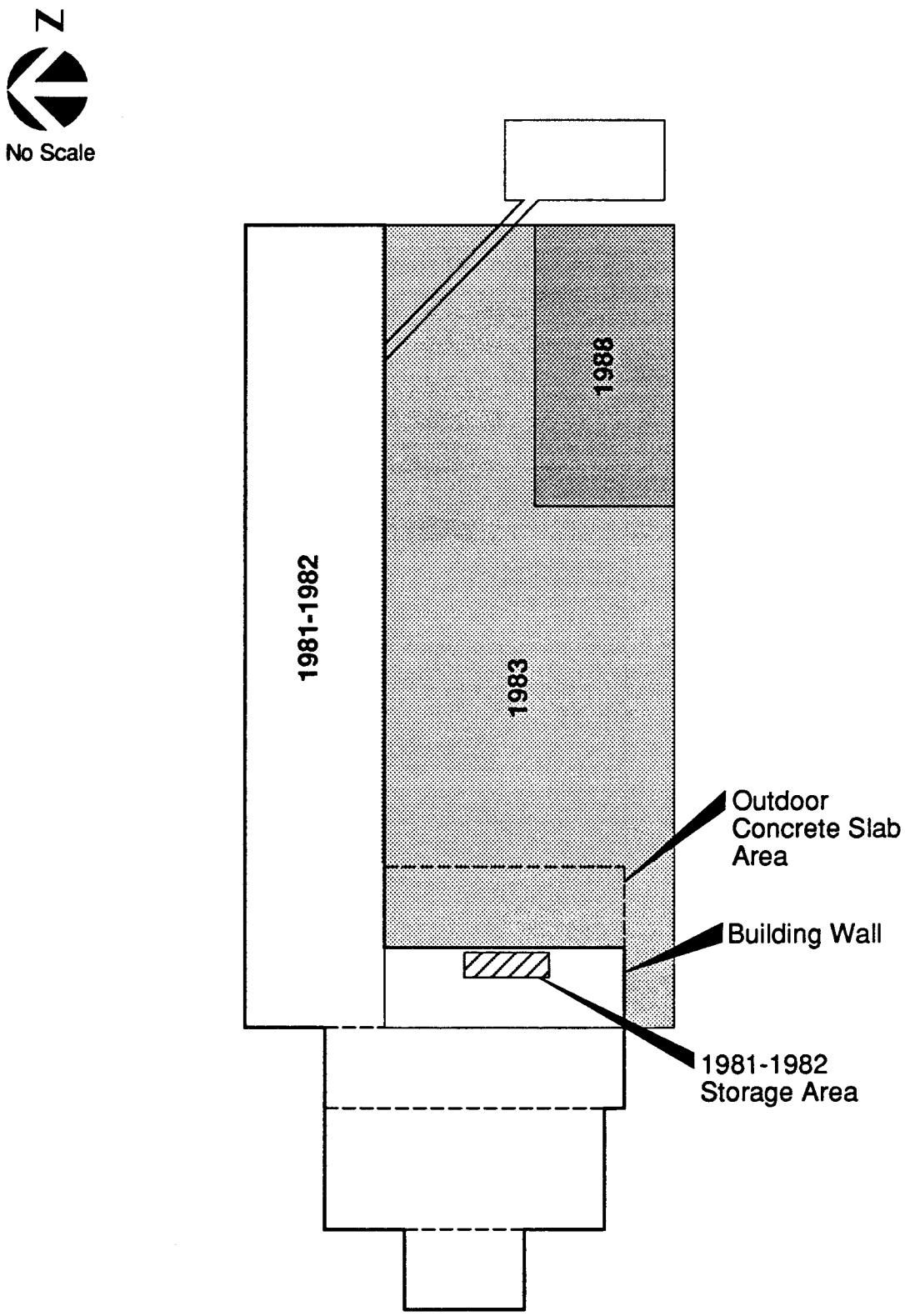
Location Plan

DOUGLAS & LOMASON COMPANY
Drum Storage Area Closure Certification Report
Red Oak, Iowa

Date: Apr. 1993

Figure: 2-1

4-6-93
D&L Red Oak/Closure Certification/Figures
DRMCER21



HDR Engineering, Inc.

Facility Modification Plan

DOUGLAS & LOMASON COMPANY
Drum Storage Area Closure Certification Report
Red Oak, Iowa

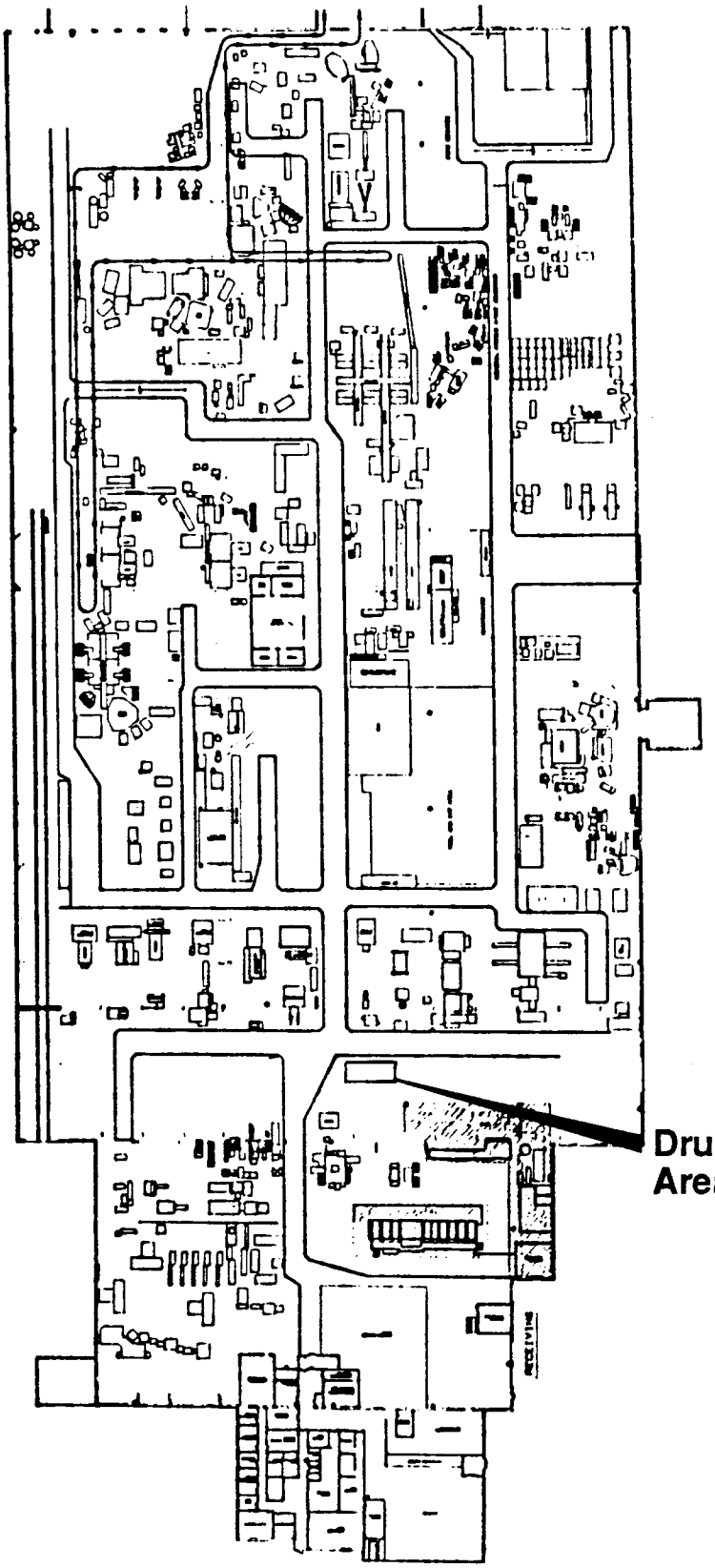
Date
Apr. 1993

Figure
2-2

4-8-93
D&L Red Oak/Closure Certification/Figures
DRMCER22

N

No Scale



Facility Plan

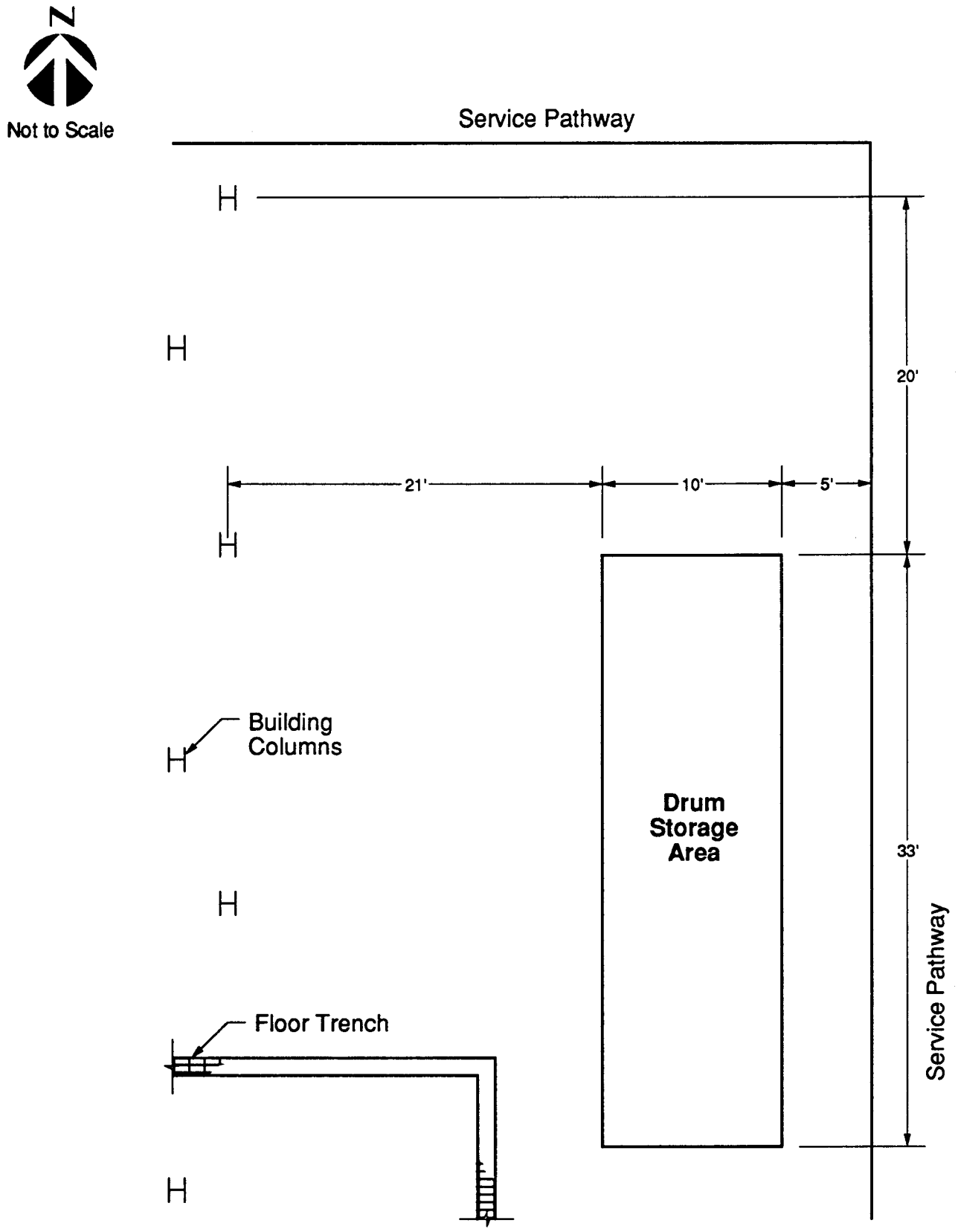
HDR Engineering, Inc.

DOUGLAS & LOMASON COMPANY
Drum Storage Area Closure Certification Report
Red Oak, Iowa

Date: Apr. 1993

Figure: 2-3

D&L Red Oak/Closure Certification/Figures
DRMCER23



Drum Storage Plan

HDR Engineering, Inc.

DOUGLAS & LOMASON COMPANY
Drum Storage Area Closure Certification Report
Red Oak, Iowa

Date
Apr. 1993

Figure
2-4

4-8-93
D&L Red Oak/Closure Certification/Figures
DRMCER24

B, Analysis of Filter Cake, is a copy of the laboratory analysis for the filter cake. During this time the facility was configured such that the drum storage area was located inside of the building on a concrete slab. The drum storage area was under roof at all times and was bounded by concrete slab on all four sides. In 1982, the storage of drums in this storage area was discontinued. The building was expanded in 1983 and 1988 to approximately its present size, as illustrated in Figure 2-2.

Past facility photos, visual identification of construction joints and interviews with existing personnel played key roles in determining the approximate location of the drum storage area, illustrated by Figure 2-4.

SECTION 3.0

CLOSURE ACTIVITIES

3.1 General

The closure activities performed for the former drum storage area were done in accordance with the Drum Storage Area Closure Plan, dated December, 1991, as approved by the EPA. The specific activities and results are presented in the following subsections.

The Closure Plan was approved by the EPA in a letter to Douglas & Lomason dated 12 March 1992. Based on public comments received, the EPA issued modifications dated 8 July 1992. Modifications by the EPA to the Closure Plan included the action level at which soil underlying the former drum storage area would require remediation. This revised action level of 400 mg/kg is presented in Section 3.3. In addition, the EPA required soil samples to be collected from the south side of the facility.

The Closure Plan presented a decision-tree diagram, included as Figure 3-1, Closure Activity Diagram, which outlined the closure activities to be undertaken, beginning at initial inspection of the storage area through the preparation of this closure certification report. The decision-tree accounted for all possible results of each closure activity. Each step of the decision-tree was explained in detail in the Closure Plan. The steps of the decision-tree which became relevant during closure are summarized below.

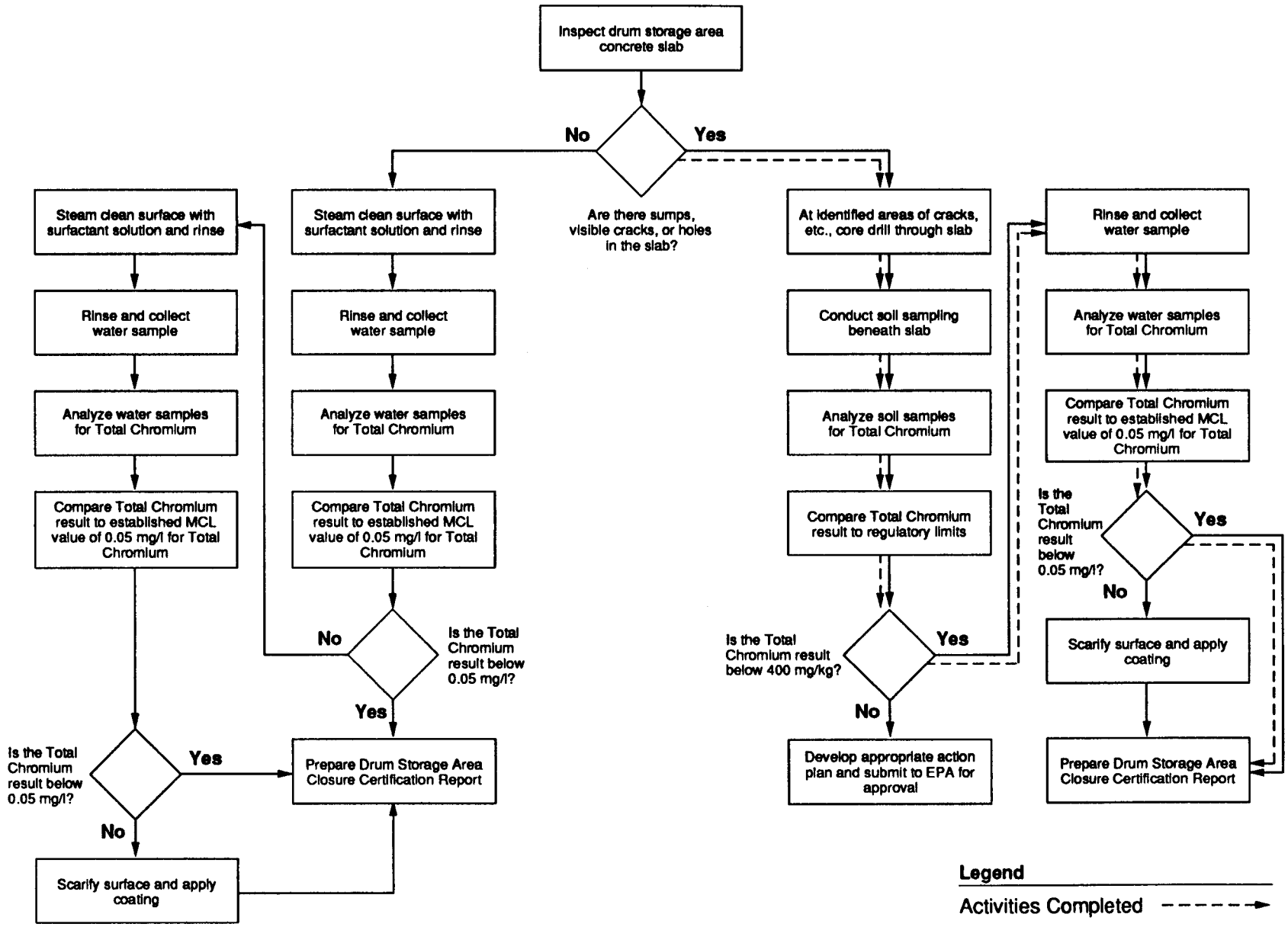
HDR Engineering, Inc.

Closure Activity Diagram

DOUGLAS & LOMASON COMPANY
Drum Storage Area Closure Certification Report
Red Oak, Iowa

Figure 3-1

Date Apr. 1993



3.2 Inspection of Concrete Slab

Once the boundaries of the former drum storage area were defined, shown by Figure 2-4, the concrete surface was inspected for the presence of sumps, holes, crevices, and cracks which could provide a vertical pathway for the analytes of concern to migrate through the slab. The permissible crack width was 0.016 inches, as established by the American Concrete Institute ("ACI") to protect reinforcing members from corrosion through the intrusion of water.

The slab was inspected on 10 November 1992 by two HDR professionals. It was determined that several cracks were present in the slab which exceeded the permissible width of 0.016 inches. Figure 3-2, Drum Storage Area Plan, illustrates the locations of these cracks relative to the boundaries of the drum storage area.

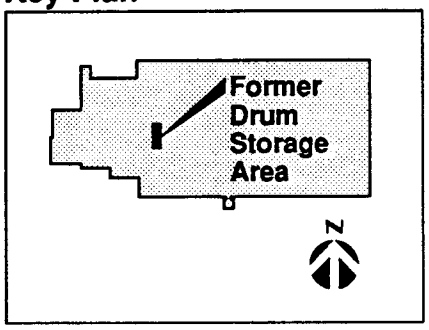
Action was then taken to identify the potential presence of the analytes of concern both below the slab at the location of the cracks and on the surface of the slab. Soil samples were obtained from the areas below the cracks, as summarized in Section 3.3. The surface of the slab was steam cleaned and the rinse water sampled, as summarized in Section 3.4.

3.3 Soil Sampling

This activity involved the collection and analysis of soil samples from below the concrete slab at locations corresponding to the cracks identified by the previous activity. The analytical results were compared to an action level of 400 mg/kg for total chromium.

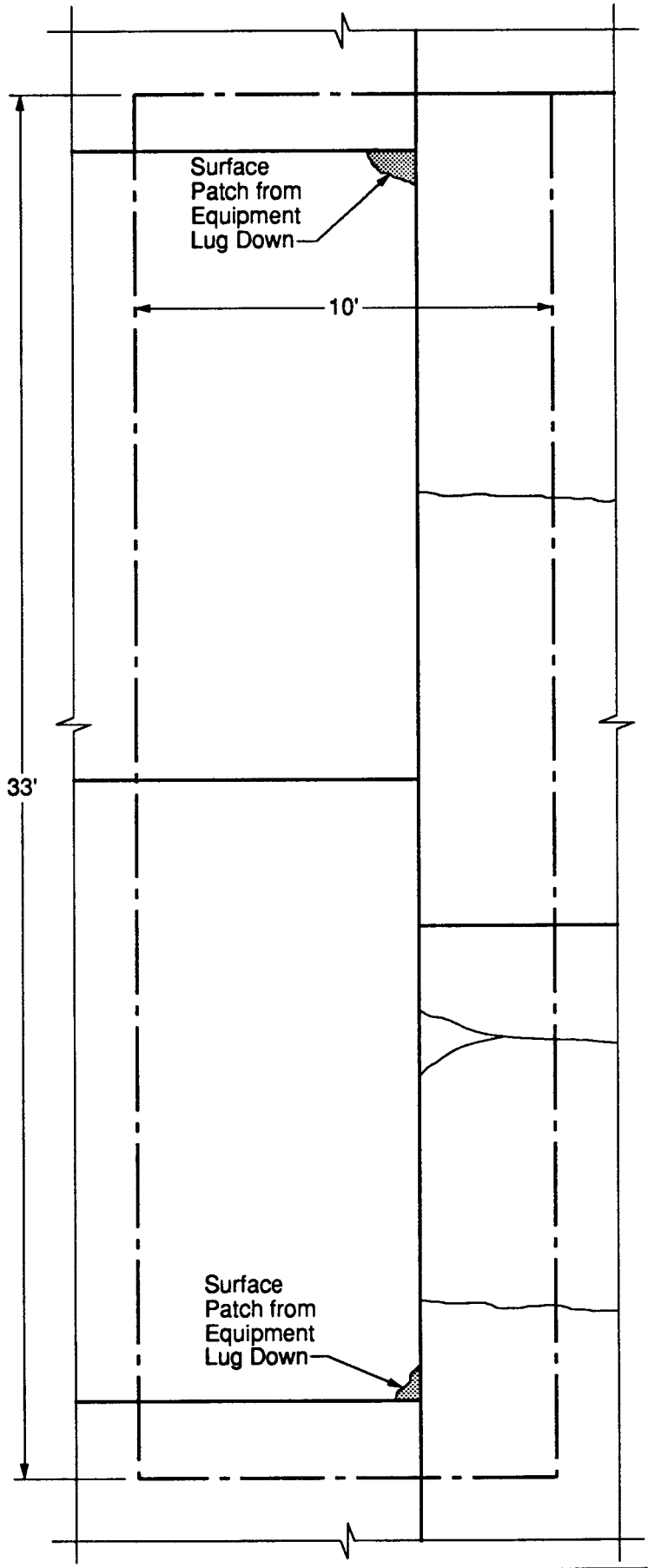
In addition to the soil sampling conducted from beneath the slab, additional sampling was conducted outside the south end of the facility.

Key Plan



Legend

- Construction Joint
- Drum Storage Area
- Crack



HDR Engineering, Inc.

Drum Storage Area Plan

DOUGLAS & LOMASON COMPANY
Drum Storage Area Closure Certification Report
Red Oak, Iowa

Date
Apr. 1993

Figure
3-2

4-8-93
D&L Red Oak/Closure Certification/Figures
DRMCER32

Outdoor sampling locations were developed based on information from public comments. The soils were analyzed and the results compared to the action level of 400 mg/kg.

Six locations were sampled from beneath the interior slab and five locations sampled on the outside, as shown by Figures 3-3, Interior Sample Locations, and 3-4, Exterior Sample Locations.

3.3.1 Interior Soil Samples

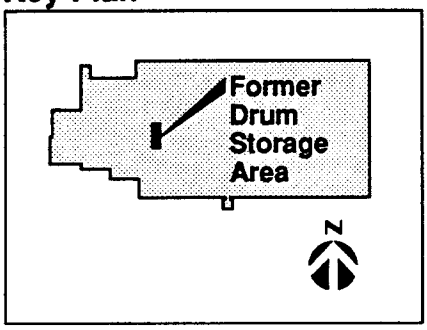
Interior soil samples were obtained with the aid of a decontaminated stainless steel hand-auger, after the concrete was cored to allow access to the underlying soil. Samples were obtained from three separate depth intervals at each boring identified by Figure 3-3. The depth intervals were:

- 0-8" below ground surface (bgs)
- 8-16" bgs
- 16-24" bgs

The hand auger, and other equipment in contact with the soil during sampling activities, were decontaminated between sample collections with an Alconox detergent wash, potable water rinse, and a deionized water final rinse. Samples were collected in 8 oz. glass sample jars, assigned unique sample identification numbers, labelled with the appropriate sample number and other relevant information, recorded on a chain-of-custody form, cooled to 4°C, and shipped to the analytical laboratory.

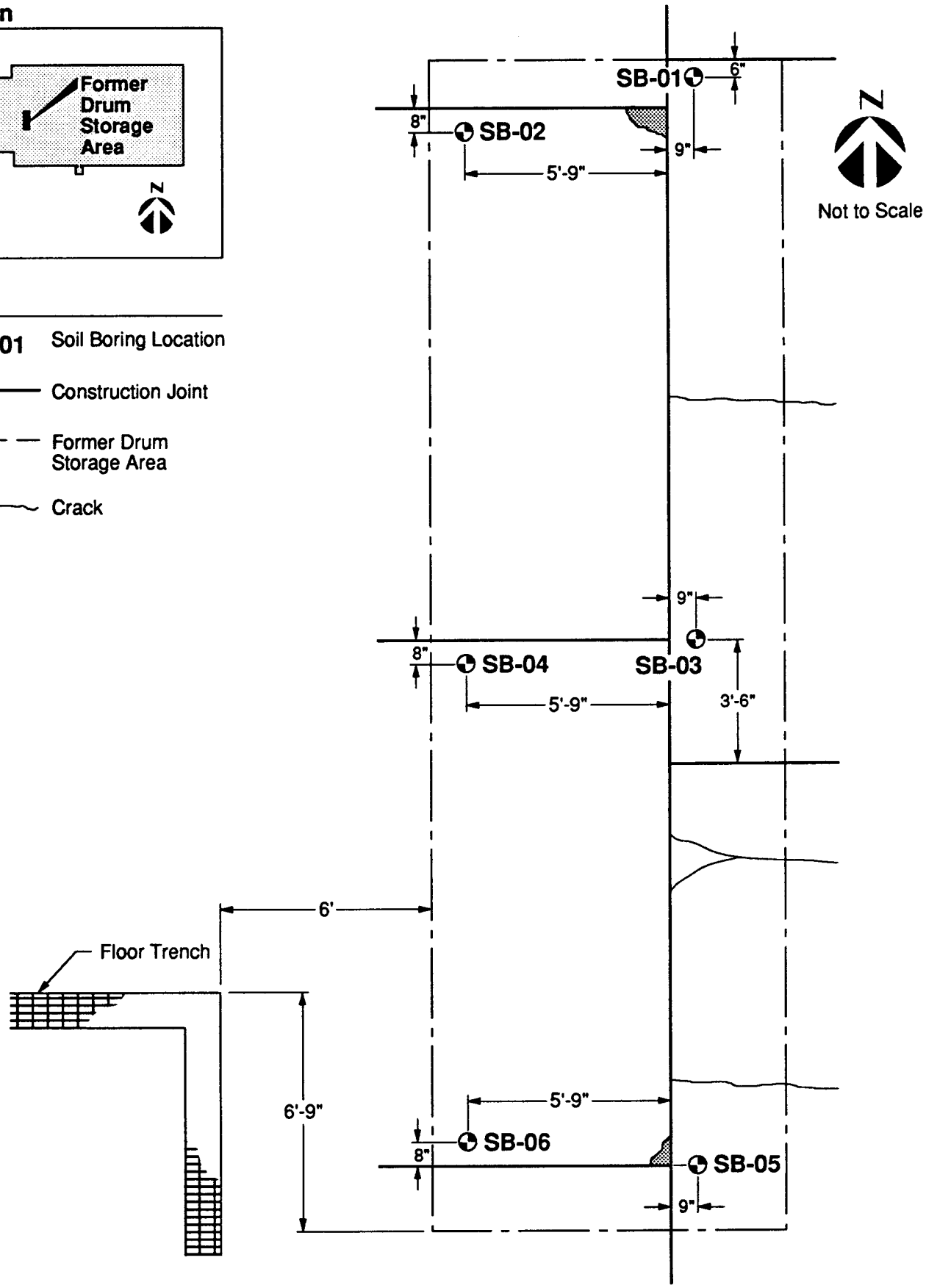
Following sampling, the boreholes were filled with a 10% bentonite/cement mix to the bottom of the existing slab. Douglas and Lomason filled the remainder of the boreholes with concrete.

Key Plan



Legend

- SB-01 — Soil Boring Location
- Construction Joint
- Former Drum Storage Area
- Crack



HDR Engineering, Inc.

Interior Sample Locations

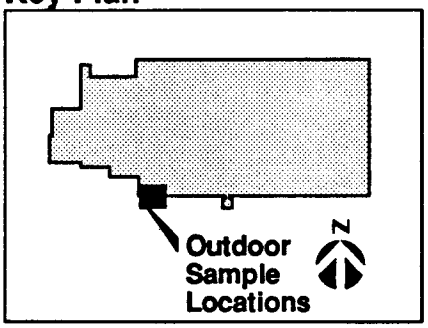
DOUGLAS & LOMASON COMPANY
Drum Storage Area Closure Certification Report
Red Oak, Iowa

Date: Apr. 1993

Figure: 3-3

4-8-93
D&L Red Oak/Closure Certification/Figures
DRMCER33

Key Plan

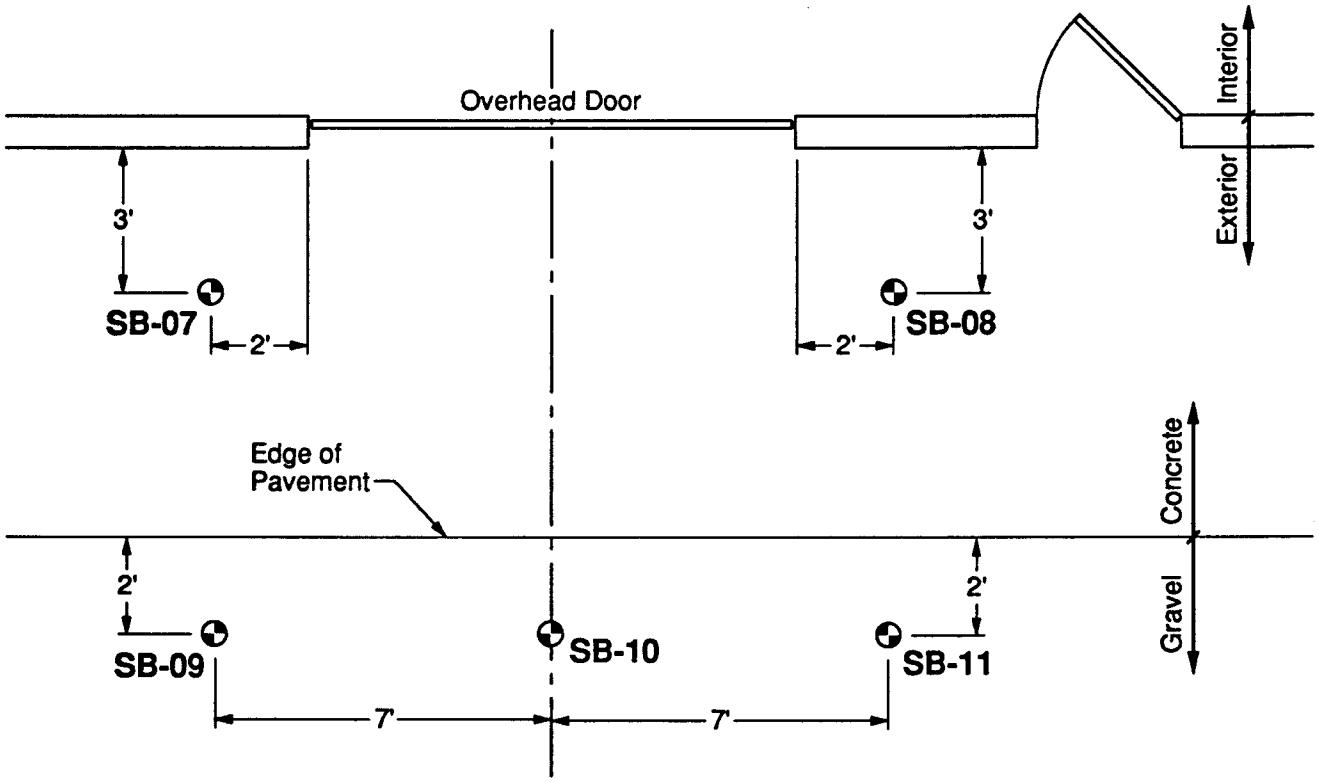


N

Not to Scale

Legend

SB-01 Soil Boring Location



HDR Engineering, Inc.

Exterior Sample Locations

DOUGLAS & LOMASON COMPANY
Drum Storage Area Closure Certification Report
Red Oak, Iowa

Date
Apr. 1993

Figure
3-4

4-6-93
D&L Red Oak/Closure Certification/Figures
DRMCER34

3.3.2 Exterior Soil Samples

The exterior sampling locations consisted of two locations beneath a concrete slab and three locations beneath a gravel road. A concrete coring machine was used to core through the concrete to gain access to the underlying soil. A two-inch stainless steel split spoon was used to obtain soil samples from boring SB-08. The sandy soil encountered in boring SB-07 would not recover in the split spoon. A stainless steel hand auger was used to obtain soil samples from boring SB-07. A geotechnical drilling rig was used to drill through the gravel road at boring SB-09, 10 and 11 and a two-inch stainless steel split spoons used to obtain the soil samples.

Composite samples of all five locations were obtained from three individual depth intervals:

- 0-6" below ground surface (bgs)
- 8-14" bgs
- 18-24" bgs

Samples from each of the three depth intervals were obtained from each boring prior to proceeding to the next boring location. All downhole drilling equipment was decontaminated prior to initial entry and between each boring. All sampling equipment, except the split-spoon sampler, was used for a single depth interval, only. The split-spoon sampler was decontaminated between each use. Samples were homogenized with stainless steel spoons in stainless steel bowls according to sample depth interval. One sample was collected in an 8-ounce glass jar from the composite of each depth interval. A duplicate sample was collected from the 18-24" depth. Each sample jar was assigned a unique identification number, labelled with the appropriate sample number and other

relevant information, recorded on a chain-of-custody form, cooled to 4°C, and shipped to the analytical laboratory.

Following sampling, the boreholes were filled with a 10% bentonite/cement mixture to the top of the ground surface. The two borings through concrete (SB-07 and 08) were filled to the bottom of the slab. Douglas and Lomason filled the remainder of these boreholes with concrete.

3.4 Analytical Results

3.4.1 Interior Sample Locations

The samples obtained from the indoor boreholes were analyzed for total chromium and compared to the EPA-approved action level of 400 mg/kg. As shown by Table 1, Analytical Results-Soil Samples, all results from the interior sample locations were significantly below the action level. Analytical data is presented in Appendix C, Analysis of Soil Samples.

3.4.2 Exterior Sample Locations

The samples obtained from the outdoor boreholes were analyzed for total chromium and compared to the EPA-approved action level of 400 mg/kg. As shown by Table 1, Analytical Results-Soil Samples, all results from the exterior sample locations were significantly below the action level. Analytical data sheets are presented in Appendix C, Analysis of Soil Samples.

Table 1
Analytical Results - Soil Samples
Total Chromium

Soil Boring Identification	Sample [1] Depth	Sample Date	Analytical Detection Limit (mg/kg)	EPA Approved Action Level (mg/kg)	Analytical Result (mg/kg)
SB-01	0-8"	12/16/92	0.50	400	15
SB-01	8-16"	12/16/92	0.50	400	14
SB-01	16-24"	12/16/92	0.50	400	15
SB-02	0-8"	12/16/92	0.50	400	16
SB-02	8-16"	12/16/92	0.50	400	17
SB-02	16-24"	12/16/92	0.50	400	17
SB-03	0-8"	12/16/92	0.50	400	14
SB-03	8-16"	12/16/92	0.50	400	13
SB-03	16-24"	12/16/92	0.50	400	15
SB-04	0-8"	12/16/92	0.50	400	14
SB-04	8-16"	12/16/92	0.50	400	12
SB-04	16-24"	12/16/92	0.50	400	14
SB-05	0-8"	12/17/92	0.50	400	45
SB-05	8-16"	12/17/92	0.50	400	22
SB-05	16-24"	12/17/92	0.50	400	12
SB-06	0-8"	12/17/92	0.50	400	15
SB-06 [2]	0-8"	12/17/92	0.50	400	46
SB-06	8-16"	12/17/92	0.50	400	11
SB-06	16-24"	12/17/92	0.50	400	16
SB-07 [3]	0-6"	12/17/92	0.50	400	32
SB-07 [3]	8-14"	12/17/92	0.50	400	17
SB-07 [3]	18-24"	12/17/92	0.50	400	12
SB-07 [2],[3]	18-24"	12/17/92	0.50	400	14

Notes

[1] Depth interval begins at clay subsoil
[2] Duplicate sample
[3] Composite sample from boring locations: SB-07, SB-08, SB-09, SB-10, SB-11

3.5 Surface Investigation

3.5.1 General

Based on the results of the subsurface investigation, the next step in this closure process was to steam-clean and rinse the slab within the boundaries of the former drum storage area. The rinse water was sampled and analyzed for total chromium for comparison to the established maximum contaminant level ("MCL") of 0.05 mg/l. These field activities were performed on 27 January 1993.

3.5.2 Steam Cleaning the Slab

A portable steam cleaner (rated pressure of 1,000 psi) was used to clean the surface of the slab. The water was directed to the floor trench located near the southwest corner of the former drum storage area. The floor trench flows to the on-site industrial wastewater treatment system.

Following the steam cleaning, potable water was used to rinse the slab two times. This water was also directed to the floor trench.

3.5.3 Sampling the Rinse Water

A portion of the water generated by the second rinse was collected with a shop-type vacuum (shop-vac) consisting entirely of plastic internal parts. An effort was made to collect a large proportion of the rinse water from the south end of the drum storage area based on analytical results of the soil samples.

Following collection of the rinse water, two 500-ml samples were collected from the shop-vac using a coliwasa as a drum thief. The sample bottles were labelled with unique sample identification numbers, recorded on a chain-of-custody form, cooled to 4°C, and sent to the analytical lab for analysis of total chromium.

3.5.4 Sample Results

As shown by Table 2, Analytical Results-Rinse Water Samples, the analytical results of the rinse water were below the action level of 0.05 mg/l. Analytical data is presented in Appendix D, Analysis of Rinse Water. Based on this result, the investigation of the former drum storage area can be terminated and its closure certified with a closure certification report.

Table 2
Analytical Results - Rinse Water Samples
Total Chromium

Sample Identification	Sample Date	Analytical Detection Limit (mg/L)	EPA Approved Action Level (mg/L)	Analytical Result (mg/L)
DL-WR01-0101	01/27/93	0.005	0.05	0.014
DL-WR01-0102 (1)	01/27/93	0.005	0.05	0.014

Note

(1) Duplicate sample

SECTION 4.0

CONCLUSIONS AND RECOMMENDATIONS

4.1 General

The objective of this project was to investigate the former drum storage area to evaluate whether the storage of drums containing filter cake materials impacted the surface slab or subsurface soil in the area. This project was conducted in accordance with the regulatory guidance of 40 CFR 265 Subpart G, which provides for closure of all hazardous waste management facilities.

In order to accomplish the objective of this project, the following steps were performed:

- Investigation of the surface of the former drum storage area to identify potential pathways for migration of analytes of concern;
- Collection and analysis of soil samples for total chromium for comparison of the results to the EPA-approved action level;
- Steam-cleaning and rinsing of the surface of the slab which was formerly the location of the drum storage area. The rinse water was sampled and analyzed for total chromium and compared to the EPA-approved action level.
- Review of results to determine whether further action is required prior to closure certification.

4.2 Conclusions

Based on results of the surface and subsurface areas of the former drum storage area, the analyte of concern, total chromium, is not present in concentrations at or above the appropriate EPA-approved action level. The drum storage area, therefore, has not impacted the surface slab or subsurface soil at its former location.

4.3 Recommendations

Based on the results of the investigation of the drum storage area, it is recommended that the former drum storage area be certified closed with no further action required.

Appendix A
Engineer's Recommendation

HDR

April 21, 1993

Mr. Ray Osborne
Corporate Environmental Manager
Douglas & Lomason Company
3800 Camp Creek Pkwy
Building 1400, Suite 134
Atlanta, GA 30331

Re: Drum Storage Area Closure Certification
Douglas and Lomason Company
Red Oak, Iowa
EPA ID No. IAD041107871

Dear Mr. Osborne:

I have reviewed the Drum Storage Area Closure Certification Report dated April 1993. I, along with HDR Engineering, Inc. (HDR) staff under my direct supervision, have monitored the closure activities as conducted by HDR.

Based on the analytical results of the soil and rinse water samples, the analyte of concern, total chromium, was not detected above the action levels as required by the EPA in any of the soil or rinse water samples submitted for analysis.

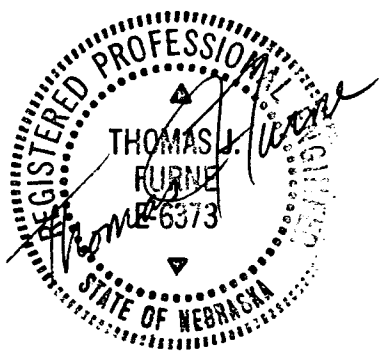
Subsequently, based on the closure results, I recommend that the closure of the former drum storage area be approved.

Very truly yours,

HDR ENGINEERING, INC.

Thomas J. Furne, P.E.

TJF/jsm



HDR Engineering, Inc.

8404 Indian Hills Drive
Omaha, Nebraska
68114-4049

Telephone
402 399-1000

Appendix B

Analysis of Filter Cake

LANGSTON LABORATORIES, INC.

Laboratory Report

Date Received: November 19, 1981
Time Received: 3:20 pm
Date Completed: December 18, 1981

LLI Project No.: 81-7558

Submitted by: Douglas & Lomason
24600 Hallwood Court
Farmington Hills, MI 48018
Attn: Mr. S. D. Cramer
P. O. No.: R 03079

Sample Description: Sludge

Sample Identification	Analysis	Results
Filter Cake from Red Oak, IA	pH	8.1
	Total Solids	33.8%
	Total Cyanide	< 1 mg/kg
	Free Cyanide	< 1 mg/kg
	Specific Gravity	1.325 g/ml
	Total Sulfide	2,050 mg/kg
	BTU	< 1,000 BTU/lb
	Ash	27.4%
	Arsenic	< 0.9 mg/kg
	Barium	43 mg/kg
	Cadmium	3.4 mg/kg
	Chromium	2.6%
	Lead	42 mg/kg
	Mercury	0.065 mg/kg
	Selenium	< 64 mg/kg
	Silver	< 2 mg/kg
	Copper	66 mg/kg
	Zinc	5.1%
	Nickel	13 mg/kg

Comments:

EP Toxicity - PAGE 2

SAMPLE Picked from D&L during onsite meeting

Approved:

Alan Kerschen
Laboratory Director

2005 West 103rd Terrace Leawood, KS 66206 913/341-7800

Sample Description: Sludge

Sample Identification	Analysis	Results
Filter Cake from Red Oak, IA	EP Toxicity	
	Cadmium	0.076 mg/liter
	Chromium	196 mg/liter
	Lead	0.40 mg/liter
	Selenium	< 0.05 mg/liter

Appendix C
Analysis of Soil Samples

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

HDR Engineering, Inc.
8404 Indian Hills Drive
Omaha, NE 68114-4049

January 11, 1993
PACE Project Number: 921218506

Attn: Mr. Tom Furne

Client Reference: 07080-007-107

Parameter	Units	MDL	10 0371599 12/16/92 12/18/92 DL-SB05- 0003	10 0371602 12/16/92 12/18/92 DL-SB08- 0004
PACE Sample Number:				
Date Collected:				
Date Received:				
Client Sample ID:				
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Chromium	mg/L	0.005	ND	ND

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

pace® INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Mr. Tom Furne
Page 2

January 11, 1993
PACE Project Number: 921218506

Client Reference: 07080-007-107

PACE Sample Number:			10 0371408	10 0371416	10 0371424
Date Collected:			12/16/92	12/16/92	12/16/92
Date Received:			12/18/92	12/18/92	12/18/92
Client Sample ID:			DL-SB01-0101	DL-SB01-0201	DL-SB01-0301
Parameter	Units	MDL			
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS					
Chromium	mg/kg	0.50	15	14	15

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

REPORT OF LABORATORY ANALYSIS

Mr. Tom Furne
Page 3

January 11, 1993
PACE Project Number: 921218506

Client Reference: 07080-007-107

Parameter	Units	MDL	10 0371432 12/16/92 12/18/92 DL-SB02- 0101	10 0371440 12/16/92 12/18/92 DL-SB02- 0201	10 0371459 12/16/92 12/18/92 DL-SB02- 0301
PACE Sample Number:					
Date Collected:					
Date Received:					
Client Sample ID:					
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS					
Chromium	mg/kg	0.50	16	17	17

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

REPORT OF LABORATORY ANALYSIS

Mr. Tom Furne
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January 11, 1993
PACE Project Number: 921218506

Client Reference: 07080-007-107

PACE Sample Number:			10 0371467	10 0371475	10 0371483
Date Collected:			12/16/92	12/16/92	12/16/92
Date Received:			12/18/92	12/18/92	12/18/92
Client Sample ID:			DL-SB03-0101	DL-SB03-0201	DL-SB03-0301
Parameter	Units	MDL			
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS					
Chromium	mg/kg	0.50	14	13	15

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REPORT OF LABORATORY ANALYSIS

Mr. Tom Furne
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January 11, 1993
PACE Project Number: 921218506

Client Reference: 07080-007-107

Parameter	Units	MDL	10 0371491 12/16/92 12/18/92 DL-SB04- 0101	10 0371505 12/16/92 12/18/92 DL-SB04- 0201	10 0371513 12/16/92 12/18/92 DL-SB04- 0301
PACE Sample Number:					
Date Collected:					
Date Received:					
Client Sample ID:					
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS					
Chromium	mg/kg	0.50	14	12	14

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REPORT OF LABORATORY ANALYSIS

Mr. Tom Furne
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January 11, 1993
PACE Project Number: 921218506

Client Reference: 07080-007-107

PACE Sample Number:			10 0371521	10 0371530	10 0371548
Date Collected:			12/16/92	12/16/92	12/16/92
Date Received:			12/18/92	12/18/92	12/18/92
Client Sample ID:			DL-SB05-0101	DL-SB05-0201	DL-SB05-0301
Parameter	Units	MDL			
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS					
Chromium	mg/kg	0.50	45	22	12

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REPORT OF LABORATORY ANALYSIS

Mr. Tom Furne
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January 11, 1993
PACE Project Number: 921218506

Client Reference: 07080-007-107

Parameter	Units	MDL	10 0371556 12/16/92 12/18/92 DL-SB06- 0101	10 0371564 12/16/92 12/18/92 DL-SB06- 0201	10 0371572 12/16/92 12/18/92 DL-SB06- 0301
PACE Sample Number:					
Date Collected:					
Date Received:					
Client Sample ID:					
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS					
Chromium	mg/kg	0.50	15	11	16

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REPORT OF LABORATORY ANALYSIS

Mr. Tom Furne
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January 11, 1993
PACE Project Number: 921218506

Client Reference: 07080-007-107

Parameter	Units	MDL	10 0371580 12/16/92 12/18/92 DL-SB06- 0102	10 0371610 12/16/92 12/18/92 DL-SB07- 0300	10 0371629 12/16/92 12/18/92 DL-SB07- 0302
PACE Sample Number:					
Date Collected:					
Date Received:					
Client Sample ID:					
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS					
Chromium	mg/kg	0.50	46	12	14

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pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

January 11, 1993
PACE Project Number: 921218506

Client Reference: 07080-007-107

PACE Sample Number:			10 0371637	10 0371645
Date Collected:			12/16/92	12/16/92
Date Received:			12/18/92	12/18/92
Client Sample ID:			DL-SB07-	DL-SB07-
Parameter	Units	MDL	0200	0100
INORGANIC ANALYSIS				
INDIVIDUAL PARAMETERS				
Chromium	mg/kg	0.50	17	32

These data have been reviewed and are approved for release.

Douglas W. Streiber
Project Manager

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

Client Reference: 07080-007-107

MDL Method Detection Limit
ND Not detected at or above the MDL.

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

HDR

8404 Indian Hills Drive
Omaha, NE 68114-4049
402 399-1000

HDR Engineering, Inc.

Chain of Custody Record

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022506

Project No.	Project Name	Parameters	Environmental	Hazardous
07080-007-107	Douglas & Comason (Red Oak)		X	☐ Low ☐ Med ☐ High

Samplers: (Signature) James P. Parlik / James A. Kamp (Printed) James P. Parlik / James A. Kamp

Lab: Address: PACE, 1710 Douglas Drive North, Minneapolis, MN 55422

Field Sample Number	Date	Time	Comp.	GRAB	Station Location	No. of Containers	Total Chromium	Remarks
DL-SB01-0101	12/16/92	1605		X	SB01 37140.8	1	X	Hold remaining sample following initial analysis of each sample.
DL-SB01-0201		1614		X	SB01 37141.6	1	X	
DL-SB01-0301		1622		X	SB01 37142.4	1	X	
DL-SB02-0101		1329		X	SB02 37143.2	1	X	
DL-SB02-0201		1354		X	SB02 37144.0	1	X	
DL-SB02-0301		1407		X	SB02 37145.9	1	X	
DL-SB03-0101		1510		X	SB03 37146.7	1	X	
DL-SB03-0201		1520		X	SB03 37147.5	1	X	
DL-SB03-0301		1540		X	SB03 37148.3	1	X	
DL-SB04-0101		1643		X	SB04 37149.1	1	X	

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Relinquished By: (Signature)	Date	Time	Received By: (Signature)
James P Parlik	12/19/92	1740			12/18/92	0930	
(Printed) James P Parlik			(Printed)	(Printed)			(Printed) David R Foy

Relinquished By: (Signature)	Date	Time	Received for Laboratory By: (Signature)	Date	Time	Results to:
	12/18/92					Tom Furne, HDR Engineering, 8404 Indian Hills Dr., Omaha, NE 68114
(Printed) David R Foy			(Printed)			

Distribution: Original Plus One Accompanies Shipment (white and yellow); Copy to Coordinator Field Files (pink).

HDR

8404 Indian Hills Drive
Omaha, NE 68114-4049
402 399-1000

Chain of Custody Record

HDR Engineering, Inc.

Project No.	Project Name	Parameters	Environmental	Hazardous
07080-007-107	Douglas & Lomason (Red Oak)		☒	☐ Low ☐ Med ☐ High

Samplers: (Signature) [signature] [signature] (Printed) James P. Pavlik / James A Kemp

Lab: Address
PACE
1710 Douglas Drive North
Minneapolis, MN 55422

Field Sample Number	Date	Time	Comp.	GRAB	Station Location	No. of Containers	Total Cadmium	Remarks
DL-SB04-0201	12/16/92	1451		X	SB04 371505	1	X	Hold remaining sample following initial analysis of each sample.
DL-SB04-0301	12/16/92	1459		X	SB04 371513	1	X	
DL-SB05-0101	12/17/92	1005		X	SB05 371521	1	X	
DL-SB05-0201	12/17/92	1013		X	SB05 371530	1	X	
DL-SB05-0301	12/17/92	1023		X	SB05 371548	1	X	
DL-SB06-0101	12/17/92	1350		X	SB06 371556	1	X	
DL-SB06-0202	12/17/92	1359		X	SB06 371564	1	X	
DL-SB06-0301	12/17/92	1405		X	SB06 371572	1	X	
DL-SB06-0102	12/17/92	1350		X	SB06 371580	1	X	
DL-SB05-0003	12/17/92	1030		X	Decon Rinse Blank	1	X	371599

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Relinquished By: (Signature)	Date	Time	Received By: (Signature)
[signature]	12/17/92	1740			12/18/92	0930	[signature]
(Printed) James P. Pavlik			(Printed)	(Printed)			(Printed) David R Foy
Relinquished By: (Signature) [signature]	Date 12/18/92	Time	Received for Laboratory By: (Signature)	Date	Time	Results to: Tom Furne, HDR, 8404 Indian Hills Dr, Omaha, NE 68114	
(Printed) David R Foy			(Printed)				

Distribution: Original Plus One Accompanies Shipment (white and yellow); Copy to Coordinator Field Files (pink).

HDR

8404 Indian Hills Drive
Omaha, NE 68114-4049
402 399-1000

Chain of Custody Record

HDR Engineering, Inc.

Project No.	Project Name	Parameters	Environmental	Hazardous
07080-007-107	Douglas & Lomason (Red Oak)		X	☐ Low ☐ Med ☐ High

Samplers: (Signature) James A. Korp / James P. Pavlik

(Printed) James A. Korp / James P. Pavlik

Lab: Address
PACE
1710 Douglas Drive North
Minneapolis, MN 55422

Field Sample Number	Date	Time	Comp.	GRAB	Station Location	No. of Containers	Total Chromium	Remarks
DLSB08-0004 (Oak)	12/17/92	1330		X	Ocean Source Water	1	X	Hold remaining sample following 37160. initial analysis of each sample 37161. 37162. 37163. 37164.
DL SB07-0300	12/17/92	1315	X		Outside Truck Entrance 18-24"	1	X	
DL-SB07-0302	12/17/92	1315	X		Outside Truck Entrance 18-24"	1	X	
DL-SB07-0200	12/17/92	1315	X		Outside Truck Entrance 8"-14"	1	X	
DL-SB07-0100	12/17/92	1315	X		Outside Truck Entrance 0-6"	1	X	

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Relinquished By: (Signature)	Date	Time	Received By: (Signature)
James P. Pavlik	12/17/92	1740			12/18/92	0930	David R Foy
(Printed) James P. Pavlik			(Printed)	(Printed)			(Printed) David R Foy
Relinquished By: (Signature) David R Foy	Date 12/18/92	Time	Received for Laboratory By: (Signature)	Date	Time	Results to:	Tom Furne HDR 8404 Indian Hills Dr. Omaha, NE 68114
(Printed) David R Foy			(Printed)				

Distribution: Original Plus One Accompanies Shipment (white and yellow); Copy to Coordinator Field Files (pink).

Appendix D
Analysis of Rinse Water

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REPORT OF LABORATORY ANALYSIS

HDR Engineering, Inc.
8404 Indian Hills Drive
Omaha, NE 68114-4049

February 08, 1993
PACE Project Number: 930128509

Attn: Mr. Tom Furne

Client Reference: 07080-007-107

PACE Sample Number:			10 0015326	10 0015334	10 0015342
Date Collected:			01/27/93	01/27/93	01/27/93
Date Received:			01/28/93	01/28/93	01/28/93
Client Sample ID:			DL-WR01-01	DL-WR01-01	DL-WR01-00
Parameter	Units	MDL	01	02	03
INORGANIC ANALYSIS					
INDIVIDUAL PARAMETERS					
Chromium	mg/L	0.005	0.014	0.014	ND

These data have been reviewed and are approved for release.

Douglas W. Streiber
Project Manager

1710 Douglas Drive North
Minneapolis, MN 55422
TEL: 612-544-5543
FAX: 612-525-3377

Client Reference: 07080-007-107

MDL Method Detection Limit
ND Not detected at or above the MDL.

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TEL: 612-544-5543
FAX: 612-525-3377

HDR
8404 Indian Hills Drive
Omaha, NE 68114-4049
402 399-1000

HDR Engineering, Inc.

Chain of Custody Record

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930128:509

Project No.	Project Name	Parameters	Environmental	Hazardous
07080-007-107	Douglas + Lomason		X	| | Low | | Med | | High

Samplers: (Signature) James P. Pavlik / James A. Kemp (Printed) James P. Pavlik / James A. Kemp

Lab: Address
PACE
1710 Douglas Drive North
Minneapolis, MN 55422

Field Sample Number	Date	Time	Comp.	GRAB	Station Location	No. of Containers	Total Chromium	Remarks	
DL-WR01-0101	01/27/93	1135		X	Drum Storage Slab	1	X	SW846 Method 3010/6010	1535.1
DL-WR01-0102	01/27/93	1140		X	"	1	X	"	1533.4
DL-WR01-0003	01/27/93	1160		X	"	1	X	"	1534.2

Relinquished By: (Signature)	Date	Time	Received By: (Signature)	Relinquished By: (Signature)	Date	Time	Received By: (Signature)
(Printed) James P. Pavlik	01/27/93	1445	(Printed) David K Fay 1/28/93	(Printed)			(Printed)
Relinquished By: (Signature)	Date	Time	Received for Laboratory By: (Signature)	Date	Time	Results to:	
(Printed)			(Printed)				

Results to: Tom Furne
HDR Engineering, Inc.
8404 Indian Hills Dr.
Omaha, NE 68114

Distribution: Original Plus One Accompanies Shipment (white and yellow); Copy to Coordinator Field Files (pink).